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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER	
AL HASHIMI, SARAH	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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uspto@dlemail.itg.ti.com

Office Action Summary	**Application No.** 10/680,928	**Applicant(s)** TUMER, ARTHUR MONROE	
	Examiner SARAH AL HASHIMI	**Art Unit** 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2007*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.
  4a) Of the above claim(s) *25,28-30,45 and 46* is/are withdrawn from consideration.
5)☐ Claim(s) *38,39 and 41-44* is/are allowed.
6)☒ Claim(s) *1-24,26-27,31-33,35,37* is/are rejected.
7)☒ Claim(s) *34 and 36* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 25,28-30,45-46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/03/2007.

2. Applicant's election with traverse of claims 1-24,26-27,31-44 in the reply filed on 12/03/2007 is acknowledged. The traversal is on the ground(s) that any of the independent claims can act as generic claims. This is not found persuasive because clearly from the drawings applicant is claiming different species that are further illustrated by the claims. It is not found that all claims are generic as applicant is claiming for reasons stated in the restriction.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4,7,31-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Schwartz (US 6,879,418).

Schwartz teaches:

Claim 1:a support structure; a device comprising a functional surface supported by a pair of torsional hinges for pivotally oscillating around said pair of torsional hinges, each one of said pair of torsional hinges extending from said functional surface to an anchor member, said anchor member attached to said support structure; and apparatus coupled to said device for selectively adjusting the stress loading on said pair of torsional hinges to change a parameter of said pivotal oscillations (fig 4&6 and col 4 lines 41-55).

Claim 2: drive apparatus for causing said functional surface to pivotally oscillate about said torsional hinges (col 4 lines 41-55).

Claim 3: anchor member is a support frame mounted to said support structure (col 4 lines 20-24 “Hinges 138 are supported by frame 140, which is mounted on the sloped portion 123 of substrate 122”).

Claim 4: a support structure; a device comprising a functional surface supported by a pair of torsional hinges for pivotally oscillating around said pair of torsional hinges, each one of said pair of torsional hinges extending from said functional surface to an anchor member, said anchor member attached to said support structure; and apparatus coupled to said device for selectively adjusting the stress loading on said pair of torsional hinges to change a parameter of said pivotal oscillations,(the oscillating structure of claim 1 wherein one said anchor member is a pair of support pads mounted to said support structure (fig 1 and fig 2 #142).

Claim 7: said apparatus for adjusting said stress loading is responsive to an electrical control signal (col 4 lines 29-30 “Electrostatic actuation is one way that scan module 118 can rotate mirror 136 to scan an incident laser beam”).

Claim 31: supporting a functional surface by a pair of torsional hinges extending between said functional surface and an anchor member such that said functional surface pivotally oscillates about said pair of torsional hinges; mounting said anchor member to a support structure; and adjusting the stress loading on said pair of torsional hinges to adjust a selected parameter of said pivotally oscillating structure (fig 1 and fig 2).

Claim 32: the step of providing a drive force to pivotally oscillate said functional surface (col 4 lines 41-55).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 5&6,33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Shin (US 2004/0114110).

Schwartz does not teach but Shin teaches:

Claim 5: said apparatus for adjusting the stress loading on said pair of torsional hinges applies at least one of tension and compression forces to said pair of torsional hinges (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Claim 6: apparatus for adjusting the stress loading on said pair of torsional hinges applies at least one of tension and compression forces to said pair of torsional hinges (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Claim 33: said step of adjusting said stress loading comprises the step of applying at least one of tension and compressional forces to said pair of torsional hinges (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz to incorporate said apparatus for adjusting the stress loading on said pair of torsional hinges applies at least one of tension and compression forces to said pair of torsional hinges as taught by Shin in order to improve imaging accuracy.

7. Claims 8-13,16,35,37,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 6,044,705).

Schwartz does not teach but Dickensheets teaches:

Claim 8&10: said apparatus for adjusting is a piezoelectric element responsive to said electrical control signal (col 12 lines 56-58 “if the current were uniform throughout the thickness of the torsion bar 34, the piezo voltage effects would then tend to cancel each other”).

Claim 9&11: said apparatus for adjusting is an electromagnetic device responsive to said electrical control signal (fig 10 #182).

Claim 12: sensor apparatus for providing an electrical signal representative of a selected parameter of said pivotal oscillations of said functional surface (fig 7 #102).

Claim 13: said functional surface pivotally oscillates at the resonant frequency of a scanning device (col 2 lines 51-5 “the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal).

Claim 16: said selected parameter is the resonant frequency of said scanning structure device (col 2 lines 51-5 “the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal).

Claim 35: the step of monitoring a selected parameter as said functional surface pivotally oscillates around said torsional hinges and providing a signal representative of said selected parameter (fig 7#102).

Claim 37: said selected parameter is the resonant frequency of said functional surface pivotally oscillating around said torsional hinges (col 2 lines 51-5 “the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal).

Claim 40: said selected parameter is the resonant frequency of a scanning device (col 2 lines 51-5 “the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz to incorporate the step of monitoring the resonant frequency of said functional surface pivotally oscillating around said torsional hinges, said apparatus for adjusting is an electromagnetic device responsive to said electrical control signal and sensor apparatus for providing an electrical signal representative of a selected parameter of said pivotal oscillations of said functional surface as taught by Neukermans in order to reduce imaging defects.

8. Claim 14,15,26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Shin (US 2004/0114110) and Neukermans (US 6,044,705).

Schwartz teaches:

Claim 14: a device comprising a functional surface supported by a pair of torsional hinges for pivotally oscillating around said pair of torsional hinges, each one of said pair of torsional hinges extending from said functional surface to an anchor member, said anchor member attached to said support structure; drive apparatus for causing said functional surface to pivotally oscillate about said torsional hinges (fig 1 and 2 and col 4 lines 25-7 “wire bond pads 142 permit scan module 118 to interface with an external device, such as a scan module driver for controlling scan module 118”).

Claim 15: a support structure; a device comprising a functional surface supported by a pair of torsional hinges for pivotally oscillating around said pair of torsional hinges, each one of said pair of torsional hinges extending from said functional surface to an anchor member, said anchor member attached to said support structure (figs 1&2).

Claim 26: a support structure; a reflective surface pivotally supported by a pair of torsional hinges, each hinge of said pair of torsional hinges extending from said reflective surface to an anchor member, said anchor member attached to said support structure and a light source for directing light to said reflective surface such that said scanning device moves a beam of light back and forth across a target (figs 1&2 and abs).

Schwartz does not teach but Shin teaches:

Claim 14: apparatus coupled to said device for selectively adjusting stress loading on said pair of torsional hinges to change a parameter of said pivotal oscillations by applying at least one of tension and compression forces to said pair of torsional hinges responsive to an electrical control signal (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Claim 15: apparatus coupled to said device for selectively adjusting stress loading on said pair of torsional hinges to change a parameter of said pivotal oscillations by applying at least one of tension and compression forces to said pair of torsional hinges responsive to an electrical control signal (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Claim 26: apparatus coupled to said anchor member for applying at least one of tension and compression forces to said pair of torsional hinges in response to an electrical control signal (fig 3 and para 34 “spring hinge 37 is positioned such that its restoring force, i.e., torsion and tension, affects the micro mirror 10 regardless of the direction that the micro mirror 10 is inclined”).

Schwartz does not teach but Neukermans teaches:

Claim 14: sensor apparatus for providing an electrical signal representative of a selected parameter of said pivotal oscillations of said functional surface; control circuitry for receiving said electrical signal from said sensor apparatus and for providing said electrical control signal to adjust said stress loading so as to maintain said selected parameters between a selected minimum value and a selected maximum value, and wherein said functional surface pivotally oscillates at the resonant frequency of a scanning device (fig 7 and col 2 lines 51-8 “the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal. Rotation of the rate gyro around the z-axis excites the surrounding gimbal's oscillation at its resonance frequency, which a set of capacitive sensors on the surrounding gimbal detect” and col 7 lines 40-47 “modes 2-5 are undesired, but cannot be completely eliminated. Other modes, called plate modes, are possible but for most applications, the frequency of plate modes are much higher and would be removed if separation is achieved with respect to the modes which have been illustrated. More complex modes are also possible, again usually at higher frequencies"—illustrates parameters that apparatus can function between).

Claim 15: drive apparatus for causing said functional surface to pivotally oscillate about said torsional hinges; further comprising sensor apparatus for providing an electrical signal representative of a selected parameter of said pivotal oscillations of said functional surface, and wherein said functional surface pivotally oscillates at the resonant frequency of said a scanning device and said selected parameter is the scan velocity of said scanning device (fig 7 #102 and col 2 lines 51-5 "the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance frequency of the inner gimbal).

Claim 26: a sensor for providing an electrical signal representative of a selected one of the parameters scan velocity and said resonant frequency of said oscillating mirror;
a control circuit for receiving said electrical signal from said sensor and for providing said electrical control signal to adjust said stress loading so as to maintain said selected parameter between a selected minimum value and a selected maximum value (fig 7 and col 2 lines 51-8 "the gimbal frame surrounding the mass of the inner gimbal is driven by electrostatic forces, and oscillates in a torsion mode about a longitudinal axis of the torsion bars at a frequency equal to the mechanical resonance

frequency of the inner gimbal. Rotation of the rate gyro around the z-axis excites the surrounding gimbal's oscillation at its resonance frequency, which a set of capacitive sensors on the surrounding gimbal detect" and col 7 lines 40-47 "modes 2-5 are undesired, but cannot be completely eliminated. Other modes, called plate modes, are possible but for most applications, the frequency of plate modes are much higher and would be removed if separation is achieved with respect to the modes which have been illustrated. More complex modes are also possible, again usually at higher frequencies"—illustrates parameters that apparatus can function between).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz to incorporate apparatus coupled to said device for selectively adjusting stress loading on said pair of torsional hinges to change a parameter of said pivotal oscillations by applying at least one of tension and compression forces to said pair of torsional hinges responsive to an electrical control signal as taught by Shin and a sensor for providing an electrical signal representative of a selected one of the parameters scan velocity and said resonant frequency of said oscillating mirror; a control circuit for receiving said electrical signal from said sensor and for providing said electrical control signal to adjust said stress loading so as to maintain said selected parameter between a selected minimum value and a selected maximum value as taught by Neukermans in order to improve imaging.

9. Claim17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 6,044,705) as applied to claim 12 above, and further in view of Heisel (US 2001/0033410).

Schwartz in view of Neukermans does not teach but Heisel teaches:

Claim 17: said sensor apparatus comprising a piezoelectric element (para 104).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz in view of Neukermans to incorporate said sensor apparatus comprising a piezoelectric element as taught by Heisel because of the efficiency of such a sensor.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 6,044,705) as applied to claim 12 above, and further in view of Ipposhi (US 5,471,086).

Schwartz in view of Neukermans does not teach but Ipposhi teaches:

Claim 18: said sensor apparatus comprises a piezoresistant element (abs).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz in view of Neukermans to incorporate said sensor apparatus comprises a piezoresistant element as taught by Ippsohi in order that the sensor function at very high temperatures without damage.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 6044705) as applied to claim 12 above, and further in view of Klement (US 2003/0169055).

Schwartz in view of Neukermans does not teach:

Claim 19: said sensor apparatus comprises a light source and one or more light intensity sensors arranged so that the intensity of light received at said one or more intensity sensors varies with the position of the oscillating mirror.

Klement teaches:

Claim 19: said sensor apparatus comprises a light source (Fig. 3 #22) and one or more light intensity sensors arranged so that the intensity of light received at said one or more intensity sensors varies with the position of the oscillating mirror (fig 3 a and b).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz in view of Neukermans to incorporate said sensor apparatus comprises a light source and one or more light intensity sensors arranged so that the intensity of light received at said one or more intensity sensors varies with the position of the oscillating mirror as taught by Klement to control the drive level and frequency of the oscillations thereby improving image quality.

12. Claims 20,23,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 6,044,705) as applied to claim 12 above, and further in view of Neukermans (US 5,629,790).

Schwartz (US 6,879,418) in view of Neukermans (US 6,044,705) does not teach but Neukermans (US 5,629,790) teaches:

Claim 20: said functional surface of said scanning device is a reflective surface and further comprising a light source for directing light to said reflective surface such that said scanning device moves a beam of light according to a selected pattern (abs “a micromachined mirror” and col 1 lines 12-16 “scanners deflect a beam of light, usually from a fixed source, over an angle ranging from several degrees to tens of degrees. The beam sweeps back and forth at a frequency determined in part by the mirror resonant frequency". The selected pattern is implicit because the resonant frequency is affecting the beam sweep).

Claim 23: said scanning structure operates as the scanning device of a laser printer (background states the scanner can be used in printing and since a laser is the light source, it is applicable to laser printers).

Claim 24: said scanning structure operates as a scanning device of a projection imaging system (background states device can be used in digital imaging, a type of projection imaging).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz in view of Neukermans 4705 to incorporate said functional surface of said scanning device is a reflective surface and further comprising a light source for directing light to said reflective surface such that said scanning device moves a beam of light according to a selected pattern as taught by Neukermans 9790 because torsional beam scanners are widely deployed for the purpose of imaging due to their ability to deflect a beam over a variety of angles to create a detailed image.

13. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Neukermans (US 5,629,790).

Schwartz does not teach but Neukermans teaches:

Claim 21: said functional surface of said scanning device is a reflective surface and further comprising a light source for directing light to said reflective surface such that said scanning device moves a beam of light according to a selected pattern (abs "a micromachined mirror" and col 1 lines 12-16 "scanners deflect a beam of light, usually from a fixed source, over an angle ranging from several degrees to tens of degrees. The beam sweeps back and forth at a frequency determined in part by the mirror resonant frequency". The selected pattern is implicit because the resonant frequency is affecting the beam sweep).

Claim 22: said scanning structure operates as the scanning device of a laser printer (background states the scanner can be used in printing and since a laser is the light source, it is applicable to laser printers).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Schwartz to incorporate said functional surface of said scanning device is a reflective surface and further comprising a light source for directing light to said reflective surface such that said scanning device moves a beam of light according to a selected pattern as taught by Neukermans 9790 because torsional beam scanners are widely deployed for the purpose of imaging due to their ability to deflect a beam over a variety of angles to create a detailed image.

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (US 6,879,418) in view of Shin (US 2004/0114110) and Neukermans (US 6,044,705) as applied to claim 26 above, and further in view of Koide (US 2003/0021613).

Schwartz in view of Shin and Neukermans does not teach but Koide teaches:

Claim 27: circuitry for modulating said beam of light as it moves back and forth and a moving photosensitive medium for receiving and spacing successive modulated moving beams of light to form an image (para 252).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was mad to modify Schwartz in view of Shin and Neukermans to incorporate circuitry for modulating said beam of light as it moves back and forth and a moving photosensitive medium for receiving and spacing successive modulated moving beams of light to form an image as taught by Koide in order to ensure efficiency in imaging.

Allowable Subject Matter

15. Claims 34,36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 34,36 is the inclusion of the limitation of a method of adjusting a parameter of a pivotally oscillating structure having a functional surface that includes *wherein said step of applying comprises the step of mounting a piezoelectrical element for applying said one of tension and compression forces to said pair of torsional hinges by providing electrical signals to distort said piezoelectric element*. It is this limitation found in claim 34, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

17. Claims ,38-39,41-44 are allowed.

18. The following is an examiner's statement of reasons for allowance:.

The primary reason for the allowance of claim 38 is the inclusion of the limitation of a method of adjusting a parameter of a pivotally oscillating structure having a functional surface that includes supporting a functional surface by a pair of torsional hinges extending between said functional surface and an anchor member such that said functional surface pivotally oscillates about said pair of torsional hinges; mounting said anchor member to a support structure; adjusting the stress loading on said pair of torsional hinges to adjust a selected parameter of said pivotally oscillating structure; monitoring a selected parameter as said functional surface pivotally oscillates around said torsional hinges and providing a signal representative of said selected parameter; *said selected parameter is the scan velocity of said functional surface pivotally oscillating around said torsional hinges*. It is this limitation found in claim 38, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 39,41-44 is the inclusion of the limitation of a method of adjusting a parameter of a pivotally oscillating structure having a functional surface that includes supporting a functional surface by a pair of torsional hinges extending between said functional surface and an anchor member such that said functional surface pivotally oscillates about said pair of torsional hinges; mounting said anchor member to a support structure; and adjusting the stress loading on said pair of torsional hinges to adjust a selected parameter of said pivotally oscillating structure by applying at least one of tension and compressional forces to said pair of torsional hinges, *wherein said step of applying comprises the step of mounting a piezoelectrical element for applying said one of tension and compression forces to said pair of torsional hinges by providing electrical signals to distort said piezoelectric element;* further comprising the step of sensing a selected parameter as said functional surface pivotally oscillates around said torsional hinges and providing a signal representative of said selected parameter, and the steps of receiving said signal representative of said sensed parameter, and generating said signals applied to said piezoelectric element so as to maintain the selected parameter of said pivotal oscillation of a scanning device between a selected minimum level and a selected maximum level. It is this limitation found in claim 39, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Response to Arguments

19. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(US 6,681,063) teaches a torsional oscillator with array.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH AL HASHIMI whose telephone number is (571)272-7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

/An H. Do/
Primary Examiner, Art Unit 2853